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**Harris, Robert B.**
Discussion of "Algorithm for Determining Controlling Path Considering Resource Continuity" by Mohammed A. Ammar and Emad Elbeltagi. — Photios G. Ioannou and Robert B. Harris; 17(1), 68-70 (2003).

**Ioannou, Photios G.**
Discussion of "Algorithm for Determining Controlling Path Considering Resource Continuity" by Mohammed A. Ammar and Emad Elbeltagi. — Photios G. Ioannou and Robert B. Harris; 17(1), 68-70 (2003).
Discussion of "Algorithm for Determining Controlling Path Considering Resource Continuity" by Mohammad A. Ammar and Emad Elbeltagi. — Photios G. Ioannou and I-Tung Yang; 17(1), 70-2 (2003).

**Iskander , Magued G.**
Accuracy of Digital Image Correlation for Measuring Deformations in Transparent Media. —Samer Sadek, Magued G. Iskander , and Jinyuan Liu; 17(2), 88-96 (2003).

**Karimi, Hassan**
Transportation Distance Measurement Data Quality. — William Rasdorf, Hubo Cai, Chris Tilley, Soren Brun, Hassan Karimi, and Forrest Robson; 17(2), 75-87 (2003).

**Kelly, Michael E.**
Analysis of Edge-Detection Techniques for Crack Identification in Bridges. —Ikhlas Abdel-Qader, Osama Abudayyeh, and Michael E. Kelly; 17(4), 255-63 (2003).

**Kim, Keesoo**
Agent-Based Compensatory Negotiation Methodology to Facilitate Distributed Coordination of Project Schedule Changes. —Keesoo Kim and Boyd C. Paulson, Jr.; 17(1), 10-8 (2003).

**Kim, Sung-Keun**
Construction Robot Path-Planning for Earthwork Operations. — Sung-Keun Kim, Jeffrey S. Russell, and Kyo-Jin Koo; 17(2), 97-104 (2003).

**Koo, Kyo-Jin**
Construction Robot Path-Planning for Earthwork Operations. — Sung-Keun Kim, Jeffrey S. Russell, and Kyo-Jin Koo; 17(2), 97-104 (2003).

**Kossler, Deb**
Wrapper Methods for Inductive Learning: Example Application to Bridge Decks. —Hani G. Melhem, Yousheng Cheng, Deb Kossler, and Dan Scherschligt; 17(1), 46-57 (2003).

**Koumousis, V. K.**
Genetic Algorithms in Competitive Environments. — C. K. Dimou and V. K. Koumousis; 17(3), 142-9 (2003).

**Kumaraswamy, Mohan M.**
Web-based Centralized Multiclient Cooperative Contractor Registration System. — S. Thomas Ng, Ekambaram Palaneeswaran, and Mohan M. Kumaraswamy; 17(1), 28-37 (2003).

**Kunz, John**
An Ontology for Relating Features with Activities to Calculate Costs. — Sheryl Staub-French, Martin Fischer, John Kunz, and Boyd Paulson; 17(4), 243-54 (2003).

**Law, Kincho H.**
Engineering Information Service Infrastructure for Ubiquitous Computing. — David Liu, Jinxing Cheng, Kincho H. Law, Gio Wiederhold, and Ram D. Sriram; 17(4), 219-29 (2003).

**Lee, George C.**
Object-Oriented Modeling of Structural Analysis and Design with Application to Damping Device Configuration. —Wei Liu, Mai Tong, Xiaoyun Wu, and George C. Lee; 17(2), 113-22 (2003).

**Liu, David**
Engineering Information Service Infrastructure for Ubiquitous Computing. —David Liu, Jinxing Cheng, Kincho H. Law, Gio Wiederhold, and Ram D. Sriram; 17(4), 219-29 (2003).

**Liu, Jinyuan**
Accuracy of Digital Image Correlation for Measuring Deformations in Transparent Media. —Samer Sadek, Magued G. Iskander , and Jinyuan Liu; 17(2), 88-96 (2003).

**Liu, Wei**
Object-Oriented Modeling of Structural Analysis and Design with Application to Damping Device Configuration. —Wei Liu, Mai Tong, Xiaoyun Wu, and George C. Lee; 17(2), 113-22 (2003).

**Lu, Ming**
Discussion of "Neural Network Forecast Model in Deep Excavation" by J. C. Jan, Shih-Lin Hong, S. Y. Chi, and J. C. Chern. —Ming Lu; 17(3), 208 (2003).

**Mathews, J. D.**
Conceptual Building Design—Evolutionary Approach. — M. Y. Rafiq, J. D. Mathews, and G. N. Bullock; 17(3), 150-8 (2003).

**Melhem, Hani G.**
Prediction of Remaining Service Life of Bridge Decks Using Machine Learning. —Hani G. Melhem and Yousheng Cheng; 17(1), 1-9 (2003).
Wrapper Methods for Inductive Learning: Example Application to Bridge Decks. —Hani G. Melhem, Yousheng Cheng, Deb Kossler, and Dan Scherschligt; 17(1), 46-57 (2003).

**Miles, J. C.**
Designer Centered Development of GA-Based DSS for Conceptual Design of Buildings. —G. M. Sisk, J. C. Miles, and C. J. Moore; 17(3), 159-66 (2003).

**Miles, John**
European Research on Intelligent Computing in Civil Engineering. —Lynne Moore and John Miles; 17(3), 131 (2003).

**Moore, C. J.**
Designer Centered Development of GA-Based DSS for Conceptual Design of Buildings. — G. M. Sisk, J. C. Miles, and C. J. Moore; 17(3), 159-66 (2003).

**Moore, Lynne**
European Research on Intelligent Computing in Civil Engineering. — Lynne Moore and John Miles; 17(3), 131 (2003).

**Morcous, G.**
Computer Assistance in Managing the Maintenance of Low-Slope Roofs. — G. Morcous and H. Rivard; 17(4), 230-42 (2003).

**Mukherjee, Amlan**
Modeling the Construction Management Process to Support Situational Simulations. — Eddy M. Rojas and Amlan Mukherjee; 17(4), 273-80 (2003).

**Navon, R.**
Building Project Model Support for Automated Labor Monitoring. — R. Sacks, R. Navon, and E. Goldschmidt; 17(1), 19-27 (2003).

**Ng, S. Thomas**
Web-based Centralized Multiclient Cooperative Contractor Registration System. —S. Thomas Ng, Ekambaram Palaneeswaran, and Mohan M. Kumaraswamy; 17(1), 28-37 (2003).

**Palaneeswaran, Ekambaram**
Web-based Centralized Multiclient Cooperative Contractor Registration System. —S. Thomas Ng, Ekambaram Palaneeswaran, and Mohan M. Kumaraswamy; 17(1), 28-37 (2003).

**Paulson, Boyd**
An Ontology for Relating Features with Activities to Calculate Costs. —Sheryl Staub-French, Martin Fischer, John Kunz, and Boyd Paulson; 17(4), 243-54 (2003).

**Paulson, Boyd C., Jr.**
Agent-Based Compensatory Negotiation Methodology to Facilitate Distributed Coordination of Project Schedule Changes. —Keesoo Kim and Boyd C. Paulson, Jr.; 17(1), 10-8 (2003).

**Rafiq, M. Y.**
Conceptual Building Design—Evolutionary Approach. — M. Y. Rafiq, J. D. Mathews, and G. N. Bullock; 17(3), 150-8 (2003).

**Raphael, Benny**
A Study of Two Stochastic Search Methods for Structural Control. —Bernd Domer, Benny Raphael, Kristina Shea, and Ian F. C. Smith; 17(3), 132-41 (2003).

**Rasdorf, William**
Transportation Distance Measurement Data Quality. — William Rasdorf, Hubo Cai, Chris Tilley, Soren Brun, Hassan Karimi, and Forrest Robson; 17(2), 75-87 (2003).

**Razavi, Abdolmehdi**
Comparison of Adaptive Network Based Fuzzy Inference Systems and B-spline Neuro-Fuzzy Mode Choice Models. —Tarek Sayed, Arash Tavakolie, and Abdolmehdi Razavi; 17(2), 123-30 (2003).

**Ren, Z.**
Multiagent System for Construction Claims Negotiation. — Z. Ren, C. J. Anumba, and O. O. Ugwu; 17(3), 180-8 (2003).

**Rivard, H.**
Computer Assistance in Managing the Maintenance of Low-Slope Roofs. — G. Morcous and H. Rivard; 17(4), 230-42 (2003).

**Robson, Forrest**
Transportation Distance Measurement Data Quality. — William Rasdorf, Hubo Cai, Chris Tilley, Soren Brun, Hassan Karimi, and Forrest Robson; 17(2), 75-87 (2003).

**Rojas, Eddy M.**
Modeling the Construction Management Process to Support Situational Simulations. — Eddy M. Rojas and Amlan Mukherjee; 17(4), 273-80 (2003).

**Russell, Jeffrey S.**
Construction Robot Path-Planning for Earthwork Operations. — Sung-Keun Kim, Jeffrey S. Russell, and Kyo-Jin Koo; 17(2), 97-104 (2003).

**Sacks, R.**
Building Project Model Support for Automated Labor Monitoring. — R. Sacks, R. Navon, and E. Goldschmidt; 17(1), 19-27 (2003).

**Sadek, Samer**
Accuracy of Digital Image Correlation for Measuring Deformations in Transparent Media. —Samer Sadek, Magued G. Iskander , and Jinyuan Liu; 17(2), 88-96 (2003).

**Sayed, Tarek**
Comparison of Adaptive Network Based Fuzzy Inference Systems and B-spline Neuro-Fuzzy Mode Choice Models. —Tarek Sayed, Arash Tavakolie, and Abdolmehdi Razavi; 17(2), 123-30 (2003).

**Scherschligt, Dan**
Wrapper Methods for Inductive Learning: Example Application to Bridge Decks. —Hani G. Melhem, Yousheng Cheng, Deb Kossler, and Dan Scherschligt; 17(1), 46-57 (2003).

**Shea, Kristina**
A Study of Two Stochastic Search Methods for Structural Control. —Bernd Domer, Benny Raphael, Kristina Shea, and Ian F. C. Smith; 17(3), 132-41 (2003).

**Shi, Jonathan Jingsheng**
Application of Fuzzy Logic to Simulation for Construction Operations. —Hong Zhang, C. M. Tam, and Jonathan Jingsheng Shi; 17(1), 38-45 (2003).

**Shi, X. J.**
Real-Time Image Thresholding Based on Sample Space Reduction and Interpolation Approach. —H. D. Cheng, X. J. Shi, and C. Glazier; 17(4), 264-72 (2003).

**Shigidi, Abdalla**
Parameter Estimation in Groundwater Hydrology Using Artificial Neural Networks. —Abdalla Shigidi and Luis A. Garcia; 17(4), 281-9 (2003).

**Sisk, G. M.**
Designer Centered Development of GA-Based DSS for Conceptual Design of Buildings. —G. M. Sisk, J. C. Miles, and C. J. Moore; 17(3), 159-66 (2003).

**Sivakumar, PL.**
Automated Path Planning of Cooperative Crane Lifts Using Heuristic Search. —PL. Sivakumar, Koshy Varghese, and N. Ramesh Babu; 17(3), 197-207 (200?).

**Smith, Ian F. C.**
A Study of Two Stochastic Search Methods for Structural Control. — Bernd Domer, Benny Raphael, Kristina Shea, and Ian F. C. Smith; 17(3), 132-41 (2003).

**Sriram, Ram D.**
Engineering Information Service Infrastructure for Ubiquitous Computing. — David Liu, Jinxing Cheng, Kincho H. Law, Gio Wiederhold, and Ram D. Sriram; 17(4), 219-29 (2003).

**Staub-French, Sheryl**
An Ontology for Relating Features with Activities to Calculate Costs. — Sheryl Staub-French, Martin Fischer, John Kunz, and Boyd Paulson; 17(4), 243-54 (2003).

**Sunkpho, Jirapon**
Java Inspection Framework: Developing Field Inspection Support Systems for Civil Systems Inspection. — Jirapon Sunkpho and James H. Garrett, Jr.; 17(4), 209-18 (2003).

**Tam, C. M.**
Application of Fuzzy Logic to Simulation for Construction Operations. — Hong Zhang, C. M. Tam, and Jonathan Jingsheng Shi; 17(1), 38-45 (2003).

**Tavakolie, Arash**
Comparison of Adaptive Network Based Fuzzy Inference Systems and B-spline Neuro-Fuzzy Mode Choice Models. — Tarek Sayed, Arash Tavakolie, and Abdolmehdi Razavi; 17(2), 123-30 (2003).

**Tilley, Chris**
Transportation Distance Measurement Data Quality. — William Rasdorf, Hubo Cai, Chris Tilley, Soren Brun, Hassan Karimi, and Forrest Robson; 17(2), 75-87 (2003).

**Tong, Mai**
Object-Oriented Modeling of Structural Analysis and Design with Application to Damping Device Configuration. — Wei Liu, Mai Tong, Xiaoyun Wu, and George C. Lee; 17(2), 113-22 (2003).

**Ugwu, O. O.**
Multiagent System for Construction Claims Negotiation. — Z. Ren, C. J. Anumba, and O. O. Ugwu; 17(3), 180-8 (2003).

**Varghese, Koshy**
Automated Path Planning of Cooperative Crane Lifts Using Heuristic Search. — PL. Sivakumar, Koshy Varghese, and N. Ramesh Babu; 17(3), 197-207 (2003).

**Virtuoso, Francisco**
Design of Highway Bridges: Natural Place for CBR. — Jorge C.-R. Andrade, João Bento, and Francisco Virtuoso; 17(3), 167-79 (2003).

**Wiederhold, Gio**
Engineering Information Service Infrastructure for Ubiquitous Computing. — David Liu, Jinxing Cheng, Kincho H. Law, Gio Wiederhold, and Ram D. Sriram; 17(4), 219-29 (2003).

**Wu, Xiaoyun**
Object-Oriented Modeling of Structural Analysis and Design with Application to Damping Device Configuration. — Wei Liu, Mai Tong, Xiaoyun Wu, and George C. Lee; 17(2), 113-22 (2003).

**Yanalak, M.**
Effect of Gridding Method on Digital Terrain Model Profile Data Based on Scattered Data. — M. Yanalak; 17(1), 58-67 (2003).

**Yang, I-Tung**
Discussion of "Algorithm for Determining Controlling Path Considering Resource Continuity" by Mohammad A. Ammar and Emad Elbeltagi. — Photios G. Ioannou and I-Tung Yang; 17(1), 70-2 (2003).

**Zhang, Hong**
Application of Fuzzy Logic to Simulation for Construction Operations. — Hong Zhang, C. M. Tam, and Jonathan Jingsheng Shi; 17(1), 38-45 (2003).